

I. Listing of Claims

1. (Currently Amended): A retrievable filter for filtering solid and semi-solid materials from a liquid moving axially in a generally tubular vessel of a mammal comprising:

a) a filter comprising an apical hub and a plurality of divergent legs, at least one of the plurality of divergent legs being secured at one end to the apical hub;

b) a stent; and

c) a locking mechanism separate from the stent and the filter, wherein the locking mechanism releasably attaching attaches the said filter to the said stent, at least one of the plurality of divergent legs being releasably secured at an opposite end to the stent by the locking mechanism, the locking mechanism comprising a stent attachment means and a filter attachment means separate from the stent attachment means, the stent attachment means being secured to the opposite end of the at least one of the plurality of divergent legs, the filter attachment means being secured to the stent, and the filter attachment means being releasably secured to the stent attachment means.

2. Cancelled.

3. (Currently Amended): The retrievable filter of claim 1 wherein the said stent is configured to engage a wall of the said generally tubular vessel and become incorporated by endothelial tissue.

4. Cancelled.

5. Cancelled.

6. Cancelled.

7. Cancelled.

8. (Currently Amended): The retrievable filter of claim 1 further comprising a retention force capable of withstanding the ~~said~~ liquid moving axially in the ~~said~~ generally tubular vessel and a retrieval force to detach the ~~said~~ filter from the ~~said~~ stent, wherein the ~~said~~ retention force is greater than the ~~said~~ retrieval force.

9. (Currently Amended): The retrievable filter of claim 1 wherein the ~~said~~ filter is configured to maintain its structure when the ~~said~~ filter is detached from the ~~said~~ stent.

10. (Currently Amended): The retrievable filter of claim 1 ~~2~~ wherein the ~~said~~ filter is configured to maintain its structure when the ~~said~~ stent attachment means is detached from the ~~said~~ filter attachment means.

11. (Currently Amended): The retrievable filter of claim 1 wherein the ~~said~~ filter is configured to avoid contact with the ~~said~~ generally tubular vessel.

12. (Currently Amended): The retrievable filter of claim 1 wherein the ~~said~~ locking mechanism is configured to position the ~~said~~ filter to avoid contact with the ~~said~~ generally tubular vessel.

13. (Currently Amended): The retrievable filter of claim 1 ~~5~~ wherein the ~~said~~ locking mechanism is configured to position at least one of the ~~said~~ plurality of divergent legs to avoid contact with the ~~said~~ generally tubular vessel.

14. (Currently Amended): The retrievable filter of claim 1 ~~2~~ wherein at least one of the ~~said~~ filter attachment means and the ~~said~~ stent attachment means is configured to position the ~~said~~ filter to avoid contact with the ~~said~~ generally tubular vessel.

15. (Currently Amended): The retrievable filter of claim 1 ~~7~~ wherein at least one of the ~~said~~ filter attachment means and the ~~said~~ stent attachment means is configured to position the ~~said~~ at least one of the ~~said~~ plurality of filter legs to avoid contact with the ~~said~~ generally tubular vessel.

16. (Currently Amended): The retrievable filter of claim 1 wherein the ~~said~~ locking mechanism is configured to avoid contact with the tubular vessel.

17. (Currently Amended): The retrievable filter of claim 1 ~~2~~ wherein at least one of the ~~said~~ filter attachment means and the ~~said~~ stent attachment means is configured to avoid contact with the ~~said~~ generally tubular vessel.

18. (Currently Amended): The retrievable filter of claim 1 wherein the ~~said~~ stent is a square stent.

19. Cancelled.

20. (Currently Amended): The retrievable filter of claim 1 wherein the ~~said~~ stent is self-expanding.

21. Cancelled.

22. (Currently Amended): The retrievable filter of claim 1 ~~2~~ wherein the ~~said~~ filter attachment means and the ~~said~~ stent attachment means form an interference fit.

23. (Currently Amended): The retrievable filter of claim 1 ~~2~~ wherein one of the ~~said~~ filter attachment means and the ~~said~~ stent attachment means comprises a cannula.

24. (Currently Amended): The retrievable filter of claim 1 ~~2~~ wherein one of the ~~said~~ filter attachment means and the ~~said~~ stent attachment means comprises an attachment wire.

25. (Currently Amended): The retrievable filter of claim 24 wherein the ~~said~~ attachment wire further comprises an extension of one of the ~~said~~ filter and the ~~said~~ stent.

26. (Currently Amended): The retrievable filter of claim 24 wherein the ~~said~~ attachment wire further comprises a bend.

27. (Currently Amended): The retrievable filter of claim 24 wherein the ~~said~~ attachment wire further comprises a ball and one of the ~~said~~ filter attachment means and stent attachment means further comprises a slot and a ball recess.

28. (Currently Amended): The retrievable filter of claim 24 wherein the ~~said~~ attachment wire comprises a Y-shaped adapter.

29. (Currently Amended): The retrievable filter of claim 28 wherein the ~~said~~ Y-shaped adapter further comprises a Y-shaped prong.

30. (Currently Amended): The retrievable filter of claim 24 wherein the ~~said~~ attachment wire comprises a looped adapter.

31. (Currently Amended): The retrievable filter of claim 30 wherein the ~~said~~ looped adapter further comprises a looped wire.

32. (Currently Amended): The retrievable filter of claim 24 wherein the ~~said~~ attachment wire comprises a coiled adapter.

33. (Currently Amended): The retrievable filter of claim 32 wherein the ~~said~~ coiled adapter further comprises a coil.

34. (Currently Amended): The retrievable filter of claim 1 wherein the ~~said~~ locking mechanism further comprises a coiled locking mechanism, the ~~said~~ coiled locking mechanism comprising at least one coil.

35. (Currently Amended): The retrievable filter of claim 34 wherein the ~~said~~ at least one coil is formed from a shape memory alloy.

36. (Currently Amended): The retrievable filter of claim 1 wherein the ~~said~~ retrievable filter is configured so that a user can decrease the force required to detach the filter from the stent to remove the filter.

37. (Currently Amended): The retrievable filter of claim 1 ~~7~~ further comprising a retrieval connection point and at least one attachment wire;

wherein the ~~said~~ at least one of the ~~said~~ plurality of divergent legs further comprises at least one cannula and at least one lumen;

wherein the ~~said~~ at least one attachment wire extends through the ~~said~~ at least one lumen and is attached at the ~~said~~ retrieval connection point;

wherein the ~~said~~ retrieval connection point further comprises a hook;

wherein the ~~said~~ hook is configured so that an upward motion applied to the ~~said~~ hook disengages the ~~said~~ at least one attachment wire of the ~~said~~ stent attachment means from the ~~said~~ filter attachment means.

38. (Currently Amended): The retrievable filter of claim 37 wherein the ~~said~~ apical hub further comprises an apical hook.

39. (Currently Amended): The retrievable filter of claim 37 wherein the ~~said~~ apical hub further comprises a locking ring.

40. (Currently Amended): A retrievable filter for filtering solid and semi-solid materials from a liquid moving axially in a generally tubular vessel of a mammal comprising:

a) a filter comprising a plurality of divergent legs each having an upstream end and a downstream end, each of the ~~said~~ plurality of divergent legs further comprising a cannula and a lumen;

b) an apical hub connecting each of the ~~said~~ downstream ends of the ~~said~~ plurality of divergent legs;

c) a stent configured to engage a wall of the ~~said~~ generally tubular vessel and become incorporated by endothelial tissue;

d) a locking mechanism separate from the stent and the filter, the locking mechanism comprising a stent attachment means and a filter attachment means separate from the stent attachment means, the stent attachment means attached to the ~~said~~ filter and the ~~a~~ filter attachment means attached to the ~~said~~ stent, the ~~said~~ stent attachment means is releasably secured to the ~~said~~ filter attachment means for releasably securing the ~~said~~ filter to the ~~said~~ stent, the ~~said~~ stent attachment means further comprising at least one attachment wire, the ~~said~~ at least one attachment wire extends through at least one lumen of the ~~said~~ plurality of divergent legs and is attached at a retrieval connection point;

wherein an upward motion applied to ~~the said~~ retrieval connection point disengages ~~the said~~ at least one attachment wire of ~~the said~~ stent attachment means from ~~the said~~ filter attachment means.

41. (Withdrawn): A method for positioning in a lumen at a desired implantation site the retrievable filter of claim 1 comprising the steps of:

advancing a guidewire into a lumen beyond the desired implantation site;

advancing a catheter comprising a dilating cannula and a sheath over the guidewire to the desired implantation site;

removing the dilating cannula and guidewire;

inserting the retrievable filter of claim 1 into the sheath and advancing the retrievable filter of claim 1 to the desired implantation site.

42. (Withdrawn): The method of claim 40 wherein the step of inserting the retrievable filter of claim 1 into the sheath and advancing the retrievable filter of claim 1 to the desired implantation site is performed using a second catheter.

43. (Withdrawn): A method for retrieving from a desired implantation site in a lumen the retrievable filter of claim 1 comprising the steps of:

advancing a guidewire into the lumen to the implantation site;

advancing a catheter over the guidewire to a retrieval connection point of the filter;

withdrawing the guidewire and advancing a retrievable loop through the catheter to the retrieval connection point of the filter;

grasping the retrieval connection point of the filter with the retrievable loop;

withdrawing the retrievable loop and the grasped retrieval connection point of the filter into the catheter and thereby causing locking mechanism to release filter from stent and collapsing filter within catheter.

44. (New): A retrievable filter for filtering solid and semi-solid materials from a liquid moving axially in a generally tubular vessel of a mammal comprising:

a filter comprising an apical hub and a plurality of divergent legs, at least one of the plurality of divergent legs being secured at one end to the apical hub;

a stent comprising a frame including a closed circumference, the frame having a plurality of sides interconnected by a series of bends, each bend including a coil; and

a locking mechanism separate from the stent and the filter, wherein the locking mechanism releasably attaches the filter to the stent, at least one of the plurality of divergent legs of the filter being releasably secured at an opposite end to at least one of the plurality of sides of the stent by the locking mechanism, the locking mechanism comprising a stent attachment means and a filter attachment means separate from the stent attachment means, the stent attachment means being secured to the opposite end of the at least one of the plurality of divergent legs, the filter attachment means being secured to at least one of the plurality of sides, and the filter attachment means being releasably secured to the stent attachment means.